

# PATENT SPECIFICATION

1,073,462

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No. 20875/64

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PATENTS ACT, 1949

SPECIFICATION NO. 1,073,462

The following corrections were allowed under Section 78 on 23rd October, 1967.

Page 1, line 1, after "Chemicals" insert "Laboratories"

THE PATENT OFFICE,  
28th November, 1967

D 94294/32

to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

- 10 This invention relates to a new type of cleaning solution which is able to clean and sterilize any part of the skin.

- Hitherto known soaps and soapless detergents (anionic and non-ionic) require additional water or other solvent to exhibit their cleaning action. Further, after using them, the dirt and residual cleaning agents should be removed by rinsing the hand with water (hot or cold). Therefore these known cleaning agents are rather difficult to use where water is not available, hard water is used, or where water cannot be used in abundance, for example, on ships at sea, or mountain climbing.

- 25 An object of the present invention is to provide a cleaning solution which has none of the disadvantages of the known cleaning agents but exhibits excellent cleaning and sterilizing effects without additional water or solvents.

- 30 According to the present invention there is provided a homogeneous, clear, viscous cleaning solution comprising a polymeric substance selected from the group consisting of polyvinyl acetate, partially hydrolysed polyvinyl acetate, polyvinyl butyrate, polyvinyl pyrrolidone, polyvinyl acetal, polyvinyl butyral, vinyl acetate-vinyl chloride copolymer, a solvent containing at least 35 30% by weight of the cleaning solution, of ethyl alcohol and as sanitizing agent one of the compounds lauryl pyridinium bromide,

2-butoxyethanol, ethyl acetate or mixtures thereof.

The cleaning solution of the present invention is smeared onto the skin to be cleaned and on rubbing it forms soft lumps containing adsorbed dirt which lumps can be swept from the skin to leave it clean and sterilized without the use of soap, towel and water.

The solution may also contain stripping agents, surface active agents, skin conditioners, perfumes, or colouring materials.

In selecting the solvents, their toxicity, odour, harmfulness, irritation, volatility and ability to remove dirt should be taken into consideration.

The sanitizing agents may be used alone or in combination with phenol or cresol.

Non-ionic surface active agents such as, for example, polyoxyethylene nonylphenol ether may be used. However, anionic agents may also be used.

In the preparation of the present cleaning solution it is preferred to include plasticizers for the substances, for example, dioctyl phthalate and dibutyl phthalate in order to soften the lumps formed during use of the cleaning solution and to increase the adsorption of dirt.

Further, in order to improve the mixing of the polymeric substances with dirt and the removal thereof, there may be also effectively added, in addition to the plasticizers for the polymeric substances mentioned above polyethylene glycol, polypropylene glycol, their co-polymers, triglycerides,

[Price 4s. 6d.]

Price 2s.

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Int. Cl.:—C 08 g 37/00; C08g 51/22).

## COMPLETE SPECIFICATION

### NO DRAWINGS

### A new Cleaning Solution

We, NIPPON COMBUSTION CHEMICALS MFG. Co. LTD., a Corporation organized under the laws of Japan, of 46, 2-chome, Jinbocho, Kanda, Chiyoda-ku, Tokyo, Japan, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to a new type of cleaning solution which is able to clean and sterilize any part of the skin.

Hitherto known soaps and soapless detergents (anionic and non-ionic) require additional water or other solvent to exhibit their cleaning action. Further, after using them, the dirt and residual cleaning agents should be removed by rinsing the hand with water (hot or cold). Therefore these known cleaning agents are rather difficult to use where water is not available, hard water is used, or where water cannot be used in abundance, for example, on ships at sea, or mountain climbing.

25 An object of the present invention is to provide a cleaning solution which has none of the disadvantages of the known cleaning agents but exhibits excellent cleaning and sterilizing effects without additional water or solvents.

According to the present invention there is provided a homogeneous, clear, viscous cleaning solution comprising a polymeric substance selected from the group consisting of polyvinyl acetate, partially hydrolysed polyvinyl acetate, polyvinyl butyrate, polyvinyl pyrrolidone, polyvinyl acetal, polyvinyl butyral, vinyl acetate-vinyl chloride copolymer, a solvent containing at least 30% by weight of the cleaning solution, of ethyl alcohol and as sanitizing agent one of the compounds lauryl pyridinium bromide,

di - isobutylphenoxy-ethoxy-dimethyl-benzyl ammonium chloride, dodecyl diamino ethyl glycine chloride, or hexachlorophene. 45

The solvent may contain water, methyl alcohol, acetone, methylethyl ketone, dioxane, 2-methoxyethanol, 2-ethoxyethanol, 2-butoxyethanol, ethyl acetate or mixtures thereof. 50

The cleaning solution of the present invention is smeared onto the skin to be cleaned and on rubbing it forms soft lumps containing adsorbed dirt which lumps can be swept from the skin to leave it clean and sterilized without the use of soap, towel and water. 55

The solution may also contain stripping agents, surface active agents, skin conditioners, perfumes, or colouring materials. 60

In selecting the solvents, their toxicity, odour, harmfulness, irritation, volatility and ability to remove dirt should be taken into consideration.

The sanitizing agents may be used alone or in combination with phenol or cresol. 65

Non-ionic surface active agents such as, for example, polyoxyethylene nonylphenol ether may be used. However, anionic agents may also be used. 70

In the preparation of the present cleaning solution it is preferred to include plasticizers for the substances, for example, dioctyl phthalate and dibutyl phthalate in order to soften the lumps formed during use of the cleaning solution and to increase the adsorption of dirt. 75

Further, in order to improve the mixing of the polymeric substances with dirt and the removal thereof, there may be also effectively added, in addition to the plasticizers for the polymeric substances mentioned above polyethylene glycol, polypropylene glycol, their co-polymers, triglycerides, 80

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esters of fatty acids, and their derivatives.

Furthermore, glycerine, lanoline, hormones, vegetable oils (e.g. olive oil) may also be applied as skin conditioners in addition to perfumes and colouring materials.

The cleaning solutions are manufactured by dissolving the polymeric substances into the solvents above mentioned to yield a viscous homogeneous clear solution. The viscous solution may also be admixed with sanitizing agents, surface active agents, plasticizers for the polymeric substances, skin conditioners, perfumes and colouring materials.

The cleaning solution according to the present invention is also effective as a nail varnish remover. If a drop of the solution is rubbed on a varnished nail, the varnish may be easily scraped off.

When the cleaning solution of the present invention is applied on the skin to be cleaned and thereafter is rubbed, the dirt on the skin, even in lines and wrinkles, may be easily removed, after adsorbing and mingling with the polymeric substances, leaving the skin in a clean and sweet smelling state, and further the skin will be maintained in a sterilized condition by the antistatic action of the alcohol and sanitizing agent.

In order that the present invention may be more clearly understood some preferred embodiments thereof will now be described by way of example only.

#### EXAMPLE I

35	Polyvinyl acetate	15	parts
	Ethyl acetate	15	"
	Ethyl alcohol	40	"
	Dioxane	10	"
	Glycerine	3	"
40	2-methoxyethanol	12	"
	Dioctyl phthalate	5	"

Thet compounds mentioned above are well mixed to give a uniform solution to which lauryl pyridinium bromide 0.5 parts and perfume are added to give a viscous product.

#### EXAMPLE II

	Vinylacetate-vinylchloride-copolymer	11	parts
50	Polyvinyl acetal	5	"
	Ethyl alcohol	35	"
	Acetone	30	"
	Dioxane	5	"
	Dibutyl phthalate	10	"
55	Glycerine	3	"
	Dodecyl diamino ethyl glycine chloride	0.5	"
	Polyethylene glycol-nonylphenol ether	0.5	"

The compounds mentioned above are well mixed to give a uniform solution to which desired perfume is added.

#### EXAMPLE III

85 parts of 12% ethanolic solution of

polyvinyl-acetate, 8 parts of dioctyl phthalate, and 4 parts of polypropylene glycol are mixed well to give a uniform solution to which 0.5 parts of hexachlorophene and desired perfume are added.

#### EXAMPLE IV

Polyvinyl pyrrolidone 20 parts, water 45 parts, ethyl alcohol 30 parts, glycerine 3 parts, lanoline 1 part, lauryl pyridinium bromide 0.5 parts, hexachlorophene, 0.2 parts and perfume are well mixed to give a uniform solution.

#### EXAMPLE V

10 parts of polyvinylbutyrate are dissolved in 70 parts of a mixed solvent of ethanol:ethylene glycol monomethylether (3:1) and 10 parts of water are uniformly added to the solution. Then dibutyl phthalate 5 parts and polyethylene glycol (M.W. 6000) 2 parts are supplementarily added and finally 15% lauryl pyridinium bromide 1 part and desired perfume are mixed to the solution to give a desired product.

#### WHAT WE CLAIM IS:—

1. A homogeneous, clear, viscous cleaning solution comprising a polymeric substance selected from the group consisting of polyvinyl acetate, partially hydrolysed polyvinyl acetate, polyvinyl butyrate, polyvinyl pyrrolidone, polyvinyl acetal, polyvinyl butyral, vinyl acetate-vinyl chloride copolymer, a solvent containing at least 30% by weight of the cleaning solution, of ethyl alcohol, and as sanitizing agent one of the compounds lauryl pyridinium bromide, di-isobutylphenoxy-ethoxy-dimethylbenzyl ammonium chloride, dodecyl diamino ethyl glycine chloride, or hexachlorophene.

2. A solution according to Claim 1, wherein the solvent contains one of the compounds water, methyl alcohol, acetone, methylethyl ketone, dioxane, 2-methoxyethanol, 2-ethoxyethanol, 2-butoxyethanol, and ethyl acetate, or mixtures of said compounds.

3. A cleaning solution according to Claim 1 or Claim 2, which also contains a stripping agent and a surface active agent.

4. A cleaning solution according to any one of Claims 1 to 3, which also contains a skin conditioner, perfume and colouring material.

5. A cleaning solution according to any one of Claims 1 to 4 which also contains a plasticizer for the said polymeric substance.

6. A homogeneous, clear, viscous cleaning solution substantially as herein described in any one of Examples I to V.

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